Conclusion: Sequential chemotherapy and radiotherapy in adult medulloblastoma/PNET tumors is feasible with acceptable toxicity. High relapse rate in our patients indicate the need of treatment intensification with better coordination of combined therapy.

EP-1128

Outcome of high grade glioma patients: To prioritise dose to primary tumour or organs at risk?

F.C.J. YIM[1], L. Howell[2], S.Y.Y. Pan[3], V.S. Kumar[3], S.R. Kennedy[3]
[1]*University of Manchester, School of Medicine, Manchester, United Kingdom*
[2]*University of Central Lancashire, School of Health, Preston, United Kingdom*
[3]*Lancashire Teaching Hospitals NHS Trust, Rosemere Cancer Centre, Preston, United Kingdom*

Purpose or Objective: Glioma is a primary brain tumour arising from the glial cells. High grade glioma, defined as grade III and IV, have poor survival rates. Glioblastoma multiforme is the commonest, but is also, the most aggressive type of glioma and is associated with a poor prognosis. Median survival of patients after treatment with debulking surgery followed by concurrent chemoradiotherapy and adjuvant chemotherapy is 14.6 months. Currently, post-operative fractionated radiotherapy is prescribed to a range of 54 to 60 Gy in fractions of 2 Gy.
Organs at risk (OARs) including optic chiasm, optic nerves and the brain stem, may lie within, or in close proximity to the PTV. Neuropathy and/or necrosis has been shown to occur when the maximum dose exceeds 55Gy in the optic chiasm and 54Gy to the whole brainstem. The standard practice at Rosemere Cancer Centre is to prioritise the OARs at the expense of the total dose, therefore prescribing to a dose of 54Gy whenever the OARs is included in the PTV, which may have repercussions on tumour control and ultimately, overall survival.
This retrospective analysis aims to compare patient outcomes between the 54Gy/57Gy and 59.4Gy/60Gy regimes, to determine if compromising the dose to spare OARs is detrimental to tumour control and survival.

Material and Methods: The data of all glioma patients treated with radiotherapy between December 2012 and December 2014 at Rosemere Cancer Centre, were collected from our electronic databases. A total of 167 patients were identified. Patients with low grade glioma and those treated with a palliative intent were excluded. Fifty eight patients were included in the analysis.

Results: Twenty one patients were on a lower dose radiotherapy regime of 54Gy or 57Gy. The remaining 37 were on a higher dose regime of 59.4Gy or 60Gy. There was a statistically significant difference (p=0.05) in patients treated with the higher dose regime comparatively, of an additional 7.2 months median overall survival (mOS) benefit. The mortality hazard for the higher dose regime is 37% lower than the lower dose regime.

Conclusion: The outcome of patients treated with the 59.4/60Gy dose regime has shown to be statistically significant with a mOS benefit and lower mortality hazard. It is therefore clear that maintenance of the higher dose (59.4/60Gy) should be a priority, either at the expense of the OARs or to as much of the tumour volume as possible, whilst still observing the OARs constraints.

EP-1129

Pre and post-irradiation hypothalamic-pituitary axis dysfunction in adults treated for brain tumours

N. Taku[1], A. Powlson[2], M. Romanchikova[3], A. Hoole[3], A. Bates[1], J. Hale[2], R. Jena[1], M. Gurnell[2], N. Burnet[1]
[1]*Addenbrooke's Hospital - University of Cambridge, Department of Oncology, Cambridge, United Kingdom*
[2]*Addenbrooke's Hospital - University of Cambridge, Institute of Metabolic Science, Cambridge, United Kingdom*
[3]*Addenbrooke's Hospital - University of Cambridge, Department of Medical Physics, Cambridge, United Kingdom*

Purpose or Objective: Collateral irradiation of normal structures during whole brain radiotherapy increases the risk of secondary toxicities, including dysfunction of the hypothalamic-pituitary axis (HPA). In studies of children treated for intracranial neoplasms, Merchant et al. showed that upwards of 66% of patients had pre-irradiation endocrinopathies and that HPA dosimetry data can be used to predict the dose-volume effects of radiation on growth hormone (GH) secretion. However, no comparable endocrine studies have been performed in adult populations. Evidence exists to suggest that hypopituitarism is an independent risk factor for mortality in adults treated with whole brain radiotherapy. Increased collaboration between radiation oncologists and endocrinologists is needed to amalgamate dosimetry data with the results of endocrine testing and better characterize HPA dysfunction. The purpose of this study is to determine the presence of baseline HPA dysfunction as well as the time to onset and dose-dependence of post-irradiation HPA dysfunction in adults treated for non-pituitary brain tumours.

Material and Methods: Twelve patients, 3 males and 9 females, have been enrolled in our prospective clinical study that will continue to recruit until 2017. Primary diagnoses included meningioma (7), pineal tumor (3), and glioma (2). Median patient age is 52 (range 23-71). Enrolled patients have undergone comprehensive baseline endocrine testing of the thyroid, gonadotropins, cortisol, prolactin, and GH prior to initiation of radiotherapy. Patients have received daily image guidance imaging with positional correction and 50-60 Gy of radiation to the tumour bed. Parametisation of available dosimetry data was performed to determine the maximum, minimum, and mean radiation doses. Endocrine testing is being repeated at 6 month intervals following radiotherapy. Patient reported outcome measures are also collected during follow-up encounters. Reviewing endocrinologists have been blinded to dosimetry data.

Results: Three patients (25%) demonstrated pre-irradiation endocrinopathies, including 2 cases of primary hypothyroidism and 1 case of primary hypogonadism. Furthermore, one patient exhibited temporary HPA suppression secondary to exogenous steroid use. Median length to endocrinology follow-up is still short at only 3 months (range 0-18). We present analyzed dose data for 10 of the 12 patients. Mean radiation doses to the hypothalamus and pituitary were 35 Gy (range 20-55) and 31 Gy (range 13-50), respectively. No cases of new, radiation-related HPA dysfunction have been identified to date.

Conclusion: The incidence of pre-irradiation HPA dysfunction underlines the need for baseline endocrinology studies. The range of radiation doses to the HPA should allow for identification of dose-volume responses.

EP-1130

Hair-sparing whole brain radiotherapy with simultaneous integrated boost using high density bolus

S. Velázquez Miranda[1], E. Montero-Perea[2], R. Dorado-Dorado[1], M. Rubio[2]
[1]*Hospital Universitario Virgen Rocío, Radiofisica, Sevilla, Spain*
[2]*Hospital Universitario Virgen Rocío, Radioterapia, Sevilla, Spain*

Purpose or Objective: Present and retrospectively evaluate our protocol of WBRT + SIB regarding radiation-induced alopecia

Material and Methods: We use masks type 35764 / 2MA / M Orfit a subnet mask with eXaskin and compatible base resonance (eXaFrame). A similar number of slices is used in the images of CT and MRI, both acquisitions with identical position and immobilization and slice thickness of 1 mm. This is possible thanks to eXaFrame, resulting in excellent quality